

**TCP/IP OFFLOAD DEVICE WITH FAST-PATH  
TCP ACK GENERATING AND TRANSMITTING MECHANISM**

Clive M. Philbrick  
Laurence B. Boucher  
Stephen E.J. Blightman  
Peter K. Craft  
David A. Higgen  
Daryl D. Starr

**ABSTRACT OF THE DISCLOSURE**

A network interface device has a fast-path ACK generating and transmitting mechanism. ACKs are generated using a finite state machine (FSM). The FSM retrieves a template header and fills in TCP and IP fields in the template. The FSM is not a stack, but rather fills in the TCP and IP fields without performing transport layer processing and network layer processing sequentially as separate tasks. The filled-in template is placed into a buffer and a pointer to the buffer is pushed onto a high-priority transmit queue. Pointers for ordinary data packets are pushed onto a low-priority transmit queue. A transmit sequencer outputs a packet by popping a transmit queue, obtaining a pointer, and causing information pointed to by the pointer to be output from the network interface device as a packet. The sequencer pops the high-priority queue in preference to the low-priority queue, thereby accelerating ACK generation and transmission.